

## ABSTRACT OF THE DISCLOSURE

A displacement difference dosimetry method is provided for use with in-vivo scintillating fiber radiation detectors. A scintillating fiber includes an insertion end which is incrementally inserted into a human body using a catheter or hypodermic needle to provide a fixed (but not necessarily known) insertion path. A photomultiplier tube is coupled to the other end of the scintillating fiber and detects both scintillation light and any Cerenkov light for each position of the scintillating fiber insertion end along the fixed insertion path. The change in the amount of light detected by the photomultiplier tube divided by the corresponding amount of change in position of the scintillating fiber insertion end gives a measure of the dose rate at the scintillation fiber tip which is substantially free from the effects of Cerenkov light.